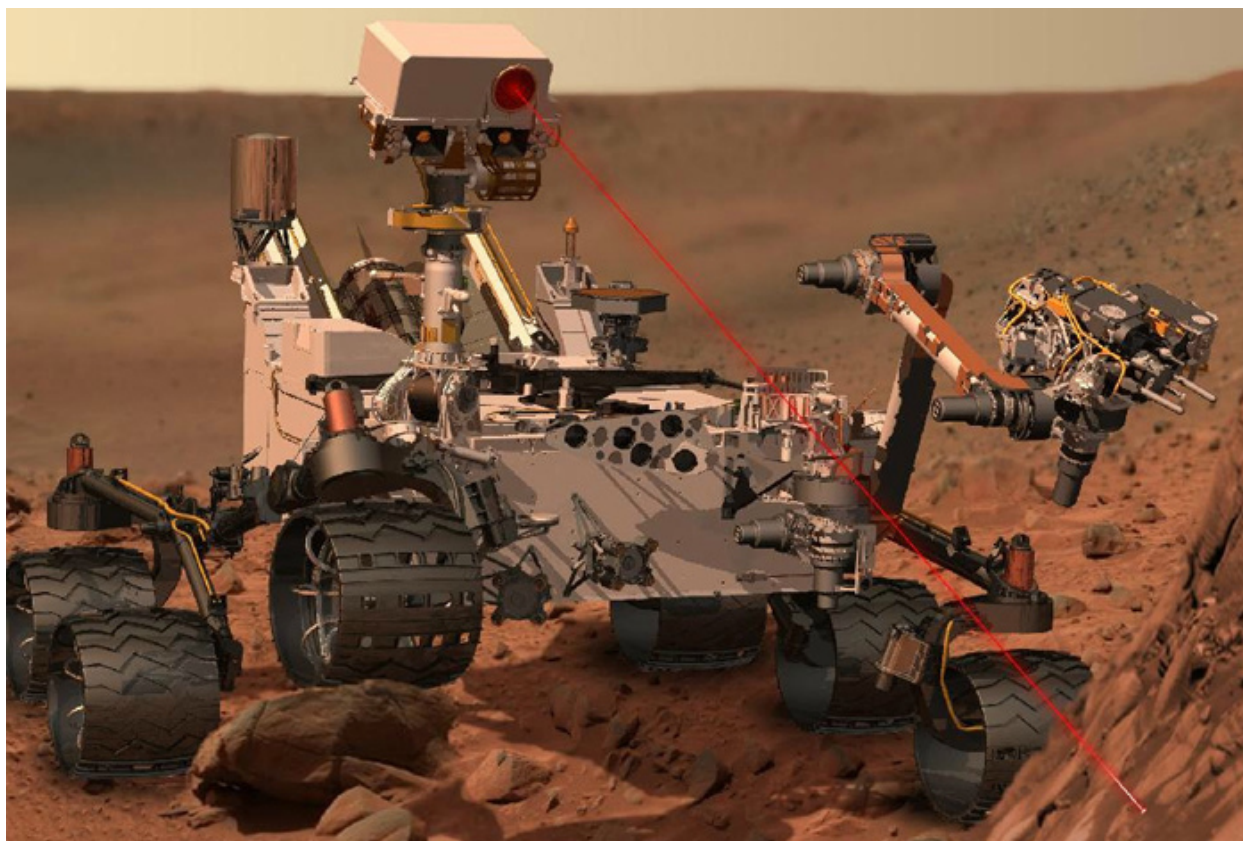


Curiosity rover zaps Mars for life signs

July 30, 2012



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Los Alamos National Laboratory technology and efforts will aid an international team of researchers in understanding whether Mars was or is habitable.

3:11

Roger Wiens on Mars Curiosity rover

Three Los Alamos technologies are aboard the Mars Science Laboratory mission's Curiosity rover, set to touch down on the surface of the Red Planet in August 2012.

- Radioisotope batteries are providing power and heat—these power sources will help drive the 10 scientific instruments on board the vehicle
- ChemCam (pictured in the illustration) is mounted on the rover's mast and uses extremely powerful pulses of laser light to vaporize pinhead-sized areas of the Martian surface from as far away as 23 feet. The tiny flashes created by these

pulses will be analyzed by a spectrometer to provide scientists with crucial information about the composition of Mars surface materials

- CheMin uses X-ray diffraction to determine the composition of samples that are collected and dropped into a funnel on the rover

Vaporizing Martian rock

One instrument, known as ChemCam, is mounted on the rover's mast and will use extremely powerful pulses of laser light to vaporize pinhead-sized areas of the Martian surface from as far away as 23 feet. The tiny flashes created by these pulses will be analyzed by a spectrometer to provide scientists with crucial information about the composition of Mars rocks.

2:12

ChemCam rock laser for Mars Science Laboratory

"ChemCam is designed to look for lighter elements such as carbon, nitrogen, and oxygen, all of which are crucial for life," said Roger Wiens, principal investigator of the MSL mission's ChemCam team.

"The system can provide immediate, unambiguous detection of water from frost or other sources on the surface, as well as carbon—a basic building block of life as well as a possible byproduct of life. This makes the ChemCam a vital component of Curiosity's mission."

Another instrument, CheMin, will use X-ray diffraction to determine the composition of samples that are collected and dropped into a funnel on the rover.

Scores of LANL scientists focused on mission

Scores of Los Alamos researchers are involved with the mission, which is designed to answer the burning question of whether Mars is or was habitable.

More than 30 people at LANL worked directly on the ChemCam instrument, and many others played supporting roles.

In an effort that comprised the expertise of nearly 50 researchers and technicians, Los Alamos also provided the plutonium canisters that will provide power and heat to the rover. The power sources, called radioisotope thermoelectric generators (RTGs), will give Curiosity several times more electricity as previous-generation rovers and are necessary for the much larger and more-advanced payload on Curiosity.

The Curiosity rover is expected to land on Mars on August 5, 2012, after traveling nearly 354 million miles from our planet. Curiosity will roam the planet's surface for about 98 weeks, or the period of one Martian year.

Los Alamos National Laboratory

www.lanl.gov

(505) 667-7000

Los Alamos, NM

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